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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/932,579	08/17/2001	Raymond C. Chen	103.1073.01	5199

22883 7590 08/10/2005  
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EXAMINER

WONG, LESLIE

ART UNIT	PAPER NUMBER
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2167

DATE MAILED: 08/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/932,579

Applicant(s)

CHEN ET AL.

Examiner

Leslie Wong

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 April 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,7-15,17,18,21,24 and 27 is/are rejected.
- 7) ☒ Claim(s) 2-6,16,19,20,22,23,25,26,28 and 29 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 1, 7-14, 24, and 27 are rejected under 35 U.S.C. 102(a) as being anticipated by **Hitz et al.** ("Hitz") (File System Design for an NFS File Server Appliance).

Regarding claim 1, **Hitz** teaches a method of operating a filesystem, said filesystem including a live filesystem accessible to users and a zombie filesystem not accessible to users, said method including

recording changes to said zombie filesystem in a persistent memory (page 13, 3<sup>rd</sup> paragraph, page 9, section 3.3, 1<sup>st</sup> paragraph, page 6, section 2.1).

Regarding claims 7 and 8, **Hitz** further teaches an operation performed using said zombie filesystem, checkpointing said filesystem during performance of said operation (page 12, section 3.5, 1<sup>st</sup> and 2<sup>nd</sup> paragraphs).

Regarding claims 9-11, **Hitz** further teaches replaying a set of said changes in response to said record (page 13, 2<sup>nd</sup> and 5th paragraphs).

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Regarding claims 12-14, **Hitz** further teaches wherein said persistent memory includes a log of substantially all changes, within a selected time duration, to either said live filesystem or said zombie filesystem (page 13, 2<sup>nd</sup>-5<sup>th</sup> paragraphs).

Regarding claims 24 and 27, **Hitz** teaches a method of operating a filesystem, said filesystem including a live filesystem accessible to users and a zombie filesystem not accessible to users, said method including replay of an operation on a file, said operation using said zombie filesystem (i.e., inode file) (page 8, paragraph 3.2, page 13, 5<sup>th</sup> paragraph).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 15, 17-18, and 21 rejected under 35 U.S.C. 103(a) as being unpatentable over **Iwamoto et al.** ("Iwamoto")(U.S. Patent 5,604,900) in view of **Hitz et al.** ("Hitz") (File System Design for an NFS File Server Appliance).

Regarding claim 15, **Iwamoto et al.** teaches a method of operating a filesystem said method including

dynamically growing said filesystem (col. 2, lines 46-48, col. 3, lines 15-27).

**Iwamoto** does not explicitly teach zombie filesystem.

**Hitz**, however, teaches filesystem including a live filesystem (i.e., snapshot directory) accessible to users and a zombie filesystem not accessible to users (i.e., inode file space) as to move a file from one directory to another, the file system must update the contents and inodes of both the source and target directories (page 6, section 2.1, page 8, paragraph 3.2, page 13, 5<sup>th</sup> paragraph).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of the cited references because **Hitz's** teaching would have allowed **Iwamoto's** to enhance the system performance of the primary filesystem by carrying out a system file operation in another filesystem as suggested by **Hitz** at page 5, 4<sup>th</sup> paragraph.

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Regarding claim 17, **Iwamoto** further teaches wherein said dynamic growth occurs, for an operation performed using said filesystem, during performance of said operation (col. 4, lines 39-46).

**Iwamoto** does not explicitly teach zombie filesystem

**Hitz**, however, teaches zombie filesystem (i.e., inode file space) as to move a file from one directory to another, the file system must update the contents and inodes of both the source and target directories (page 6, section 2.1, page 8, paragraph 3.2, page 13, 5<sup>th</sup> paragraph).

Regarding claims 18 and 21, **Iwamoto** further teaches a method of operating a filesystem, method including

transfer of a file to said filesystem before breakage of links to blocks in said file, in response to an operation on said file, said operation using said filesystem (col. 6, lines 38-45; col. 4, lines 41-45; Fig. 1, elements 4, 44, and 22 (i.e., expanded space)).

**Iwamoto** does not explicitly teach filesystem including a live filesystem accessible to users and a zombie filesystem not accessible to users.

**Hitz**, however, teaches filesystem including a live filesystem (i.e., snapshot directory) accessible to users and a zombie filesystem not accessible to users (i.e., inode file space) as to move a file from one directory to another, the file system must update the contents and inodes of both the source and target directories (page 6, section 2.1, page 8, paragraph 3.2, page 13, 5<sup>th</sup> paragraph).

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It would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of the cited references because **Hitz's** teaching would have allowed **Iwamoto's** to enhance the system performance of the primary filesystem by carrying out a system file operation in another filesystem.

***Allowable Subject Matter***

5. Claims 2-6, 16, 19-20, 22-23, 25-26, and 28-29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance:

Prior art of record fails to teach a combination of elements including breaking links associating disk blocks with said file in a plurality of steps while said file or a portion of file is associated with said zombie filesystem, wherein said recording of changes includes recording said breaking of links in a plurality of steps as recited in dependent claims 2 and 3.

Prior art of record fails to teach a combination of elements including for an operation apparent to users as substantially atomic, performing said operation in a plurality of steps using said zombie filesystem, wherein said recording changes is

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performed in said persistent memory for each of said plurality of step as recited in dependent claim 4.

Prior art of record fails to teach a combination of elements including an operation performed on a file having attached data elements, performing said operation using said zombie file-space as recited in dependent claim 5.

Prior art of record fails to teach a combination of elements including for an operation performed using said zombie filespace, altering a size of said zombie filespace during performance of said operation as recited in dependent claim 6.

Prior art of record fails to teach a combination of elements including allocating storage within said zombie filespace for metadata associated with said file and performing said dynamic growth in response to failure of said allocation storage as recited in dependent claim 16.

Prior art of record fails to teach a combination of elements including breaking a link associating with said live filespace and breaking links associating disk blocks with said file in a plurality of steps while said file is associated with said zombie filespace, recording said breaking of links in a plurality of steps, and altering said live filespace to reflect said deletion operation as recited in dependent claims 19 and 22.



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Prior art of record fails to teach a combination of elements including breaking a link associating said portion with said file in said live filespace and breaking links associating disk blocks with said file in a plurality of steps while a portion of said file is associated with said zombie filespace, wherein said recording of changes includes recording said breaking of links in a plurality of steps, and altering said live filespace to reflect said changes associated with said breaking of links as recited in dependent claims 20 and 23.

Prior art of record fails to teach a combination of elements including breaking links associating disk blocks with said file in a plurality of steps while said file is associated with said zombie filespace, recording said breaking of links in said persistent memory in a plurality of steps, and altering said live filespace to reflect said deletion operation, and recording said alteration in said persistent memory as recited in dependent claims 25 and 28.

Prior art of record fails to teach a combination of elements including breaking links associating disk blocks with said file in a plurality of steps while a portion of file is associated with said zombie filespace, recording said breaking of links in said persistent memory in a plurality of steps, and altering said live filespace to reflect changes associated with said breaking links, and recording said alteration in said persistent memory as recited in dependent claims 26 and 29.

***Response to Argument***

6. Applicant's arguments with respect to claims 1-29 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leslie Wong whose telephone number is (571) 272-4120. The examiner can normally be reached on Monday to Friday 9:30am - 6:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E Breene can be reached on (571) 272-4107. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Leslie Wong  
Patent Examiner  
Art Unit 2167

LW  
July 9, 2005